Why It Matters

In the past, people in the United States thought that government had no right to try to manage the economy. Government was simply there to provide goods (such as national defense) that the economy could not produce itself. Today, many people believe that if something is wrong with the economy, the government should get to work on it. Government should manage the economy. Specifically, if inflation occurs, government should get rid of it; if the level of unemployment is too high, government should lower it; if economic growth is weak, government should give the economy a boost.

Government uses monetary and fiscal policy to try to manage the economy at times. Do monetary and fiscal policy always work as hoped? Not always. This chapter helps you understand the technical details and effects of monetary and fiscal policy.

In October of 2005 President Bush nominated economist Ben Bernanke to replace Alan Greenspan as Federal Reserve chairman. In this chapter you will learn about the important decisions that the Federal Reserve chairman must make about the expansion and contraction of the nation's money supply.
The following events occurred one day in February.

9:43 A.M. George and Michelle are in a coffee shop talking about the tax bill that the president outlined the night before on television. George says, "I think it’s wrong to cut taxes right now. We have a huge budget deficit in this country and the lower tax rates will just make the deficit worse because they’ll cut down on the tax revenue the government generates.” Michelle says, "Yeah, but I really need a tax cut now. I’ve got a lot of bills to pay.”

• Is George right? Will lower tax rates end up decreasing tax revenues?

1:12 P.M. Natalie is in high school economics class learning about fiscal and monetary policy. Her teacher, Mr. Evans, says, "Sometimes when the government spends more money, people end up spending less. It’s sort of like being in a family. When you spend more money, your father or mother or sister ends up spending less.” Natalie thinks to herself, "I don’t think Mr. Evans has ever met my family.”

• If the government spends more, do people spend less?

3:03 P.M. Mark and Carla are talking about their economics project. Mark says, "I don’t see why the government doesn’t simply print a lot of money and hand it out to people. That way everyone could be rich.” Carla says, "But wouldn’t that cause inflation?” Mark says, "I guess, but if everybody had more money, then they could afford to pay higher prices.”

• What kind of monetary policy is Mark advocating, and what are its likely effects?

10:56 P.M. Carl is at home watching the nightly news on television. The economics reporter for the nightly news is talking about the economy: "Signs indicate that inflation is moving upward and, oddly enough, the unemployment rate is too. It could mean that the economy is in for a dose of stagflation just around the corner.” Carl thinks, "What in the world is stagflation?”

• What is stagflation?
Two Types of Fiscal Policy

Fiscal policy deals with government spending and taxes. If government increases spending, reduces taxes, or both, government is said to be implementing expansionary fiscal policy. The objective of this type of policy is to increase total spending in the economy to reduce the unemployment rate. For example, suppose government is currently spending $1,800 billion a year and it increases its spending to $1,900 billion a year. This act is called expansionary fiscal policy.

If government decreases spending, raises taxes, or both, government is said to be implementing contractionary fiscal policy. The objective is to reduce total spending in the economy in order to reduce inflation. For example, suppose government is currently spending $1,800 billion a year and it reduces its spending to $1,700 billion a year. This act is called contractionary fiscal policy. (The two types of fiscal policy discussed here are summarized in Exhibit 13-1.)

Expansionary Fiscal Policy and the Problem of Unemployment

Suppose the unemployment rate in the economy is 8 percent and government sets a goal of getting the unemployment rate down to 5 percent. Does it have any economic tools to help it get the unemployment rate down? Some economists say that the answer is yes. Government can use the tool of expansionary fiscal policy. Here is how these economists explain it.
A high unemployment rate is the result of people not spending enough money in the economy. In other words, if people spend more money, firms will sell more goods, and they will have to hire more people to produce the goods (in the process lowering the unemployment rate).

To reduce the unemployment rate, Congress should implement expansionary fiscal policy—that is, it should increase government spending, lower taxes, or both. If it chooses to increase government spending instead of lowering taxes, government can choose to spend more on health care, education, national defense, and many other needed programs.

An increase in government spending means more spending in the economy. For example, suppose that at current prices the government is spending $1,800 billion, business is spending $1,200 billion (buying factories, machines, and materials), and consumers are spending $6,000 billion (buying television sets, clothes, computers, and other goods). Total spending at current prices is $9,000 billion. If government decides to increase its spending by $200 billion, to $2,000 billion, then total spending increases to $9,200 billion.

As a result of the increase in total spending, firms sell more goods. When firms start to sell more goods, they have to hire more workers to produce the additional goods. The unemployment rate goes down as a result of more people working.

**A Student Asks**

**QUESTION:** Let me see if I have this right. The reason the unemployment rate is high (at 8 percent) is because there is not enough spending (buying) in the economy. So the government boosts spending and the unemployment rate comes down.

**ANSWER:** Yes, that is essentially it. An analogy comes to mind. Suppose a person is feeling sluggish. The reason he is feeling sluggish is because he isn’t getting enough vitamins. So the doctor boosts his vitamin intake and he feels better. Expansionary fiscal policy works the same way. The patient (the economy) is sluggish (it has too high an unemployment rate). The doctor (the government) says the sluggishness will go away if vitamins (increased spending) are added to the diet. As a result the patient (the economy) gets better (its unemployment rate drops).

**The Issue of Crowding Out**

Some economists do not agree that things will turn out the way they were just presented. They say that when government spends more, total spending in the economy does not necessarily increase. They bring up the issue of crowding out, which occurs when increases in government spending lead to reductions in private spending (spending made in the private sector by consumers and businesses).

Suppose that currently in the economy, $60 million is spent on an average day. We’ll say that $45 million is spent by the private sector (households and businesses buying such things as television sets, houses, and...
factories), and $15 million is spent by government (buying such things as defense and education). Suppose now that government decides to increase its spending on education, raising its average daily spending to $17 million. What is the consequence? Does total spending rise to $62 million ($17 million in public spending plus $45 million in private spending)?

Not necessarily, say some economists. Because government spends more on education, people may decide to spend less on education. Specifically, because government spends more on public schools and public school teachers, people may decide they can spend less on private schools and private school teachers. As a result, private spending will drop from $45 million to $43 million. Total spending therefore will remain at $60 million ($17 million in government spending plus $43 million in private spending).

In this example, where an increase of $2 million in government spending causes a $2 million decline in private spending, we have complete crowding out: each dollar increase in government expenditures is matched by a dollar decrease in private spending. With complete crowding out, an increase in government expenditures does not lead to an increase in total spending in the economy. Thus, it does not affect unemployment.

As another example, if the government spends an extra $2 million, and consumers and businesses spend less—but not $2 million less—incomplete crowding out is the result. When a decrease in private spending only partially offsets the increase in government spending, increased government spending does raise the total spending in the economy.

**Example:** The unemployment rate is high at 9 percent. The government wants to bring it down to 5 percent. The government therefore enacts expansionary fiscal policy by raising its daily spending by $10 million a day. As a result, the private sector lowers its spending by $10 million a day. Did total spending in the economy go up? No. It’s just that more government spending was completely offset by less private sector spending. Because every added dollar of government spending was offset by one less private sector dollar, we have complete crowding out.

**Question:** Can you explain crowding out using your vitamin comparison?

**Answer:** Yes, but with a modification. Let’s say that we can get vitamins in two different ways. The first way is by having your body produce vitamins itself, using the food that you eat. The second way is the way we all know—getting vitamins through a vitamin pill. Now let’s say the patient is sluggish because he lacks vitamins. The doctor gives him some vitamin pills. Now, because the doctor gives the patient some vitamin pills, the patient’s body “decides” it is going to produce fewer vitamins itself. Crowding out happens in the same way. The government does X, but because the government is doing X now, when it wasn’t before, the private sector no longer does X, or it doesn’t do as much X as it used to do.
Contractionary Fiscal Policy and the Problem of Inflation

Chapter 12 stated that inflation (increases in the price level) can occur when the aggregate demand in the economy grows faster than the aggregate supply in the economy. In other words, inflation is the result of too much spending in the economy compared to the quantity of goods and services available for purchase. Some economists describe inflation as “too much money chasing too few goods.” Many of these economists argue that the way to get prices down in the economy is to reduce spending, which they say can be done...
through contractionary fiscal policy. Here are the points they make:

- Inflation is the result of too much spending in the economy. So, if people spent less money, firms would initially sell fewer goods. The firms would end up with a surplus of goods in their warehouses. To get rid of their goods, they would have to lower prices.
- To get prices down, Congress should implement contractionary fiscal policy by decreasing government spending, raising taxes, or both. Let’s suppose that government cuts its spending.
- The decrease in government spending means less overall spending in the economy. To illustrate, suppose that at current prices the government is spending $1,800 billion, business is spending $1,200 billion, and consumers are spending $6,000 billion. Total spending at current prices is $9,000 billion. Government decides to cut its spending by $200 billion. Now total spending decreases to $8,800 billion.
- As a result of the decrease in total spending, firms initially sell fewer goods.
- When they sell fewer goods, firms end up with surplus goods on hand. The inventories in their warehouses and factories rise above a desired level, so to get rid of the unwanted inventory (the surplus goods), firms lower prices.

A Student Asks

**QUESTION:** If high unemployment was similar to having “too few vitamins” (to return to the story of a person’s health and the doctor), would inflation be similar to having “too many vitamins”?

**ANSWER:** Yes, and so the “cure” for too many vitamins is for the doctor to cut back on the number of vitamin pills she recommends that you take each day. That would be similar to the government reducing its spending (enacting contractionary fiscal policy).

A Student Asks

**QUESTION:** I’ve noticed in our discussion of fiscal policy so far, that you say some economists think one way, but then other economists disagree with them. Is there much disagreement among economists?

The Issue of Crowding In

As with expansionary fiscal policies, some economists do not agree that things will turn out the way they are supposed to with contractionary fiscal policies. They say that if government reduces its spending, total spending in the economy will not necessarily decline. They point out that crowding in occurs when decreases in government spending lead to increases in private spending.

Suppose government decreases its spending on education by $2 million. As a result, people turn to private education, increasing their purchases of it by $2 million. This dollar-for-dollar trade-off is referred to as complete crowding in; for every $1 decrease in government spending on education, private spending on education increases $1. Because of complete crowding in, total spending in the economy does not change. Thus, if complete crowding in occurs, a decrease in government spending will not lead to a decrease in total spending in the economy, so it will not bring prices down.

It is possible that crowding in is not complete. In other words, it is possible to have incomplete crowding in or zero crowding in. With zero crowding in, private spending remains constant for every $1 cut in government spending. Incomplete crowding in means that for every $1 cut in government spending, private spending rises by less than $1. For example, for every $1 decrease in government spending on education, private spending on education may rise by, say, 60 cents. With either zero or incomplete crowding in, a decrease in government spending will lead to a decrease in total spending in the economy, so it will bring prices down.

(Exhibit 13-2 summarizes the effectiveness of fiscal policy under various conditions.)
Fiscal Policy and Taxes

The discussion up to this point focused on either an increase or a decrease in government spending. Besides changing its spending, government can also change taxes. Changes in taxes are different from spending changes in that tax changes can affect two sides of the economy, rather than just one. Changes in taxes can affect the spending (demand) side of the economy and the producing (supply) side of the economy.

How Taxes Can Affect the Spending (Demand) Side of the Economy

You may remember from Chapter 11 that economists designate four sectors in the economy: the household sector, the business sector, the government sector, and the foreign sector. For now, let’s look at just the household sector (also called consumption) and assume that no crowding out or crowding in occurs.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Policy</th>
<th>Condition existing</th>
<th>Does the policy affect total spending in the economy?</th>
<th>Does the policy meet the objective (as stated in the first column)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce unemployment</td>
<td>Expansionary fiscal policy (as measured by an increase in government spending)</td>
<td>No crowding out</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Same as above</td>
<td>Complete crowding out</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Same as above</td>
<td>Incomplete crowding out</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reduce inflation</td>
<td>Contractionary fiscal policy (as measured by a decrease in government spending)</td>
<td>No crowding in</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Same as above</td>
<td>Complete crowding in</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Same as above</td>
<td>Incomplete crowding in</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(a) The degree of crowding out determines the effectiveness of expansionary fiscal policy.
(b) The degree of crowding in determines the effectiveness of contractionary fiscal policy.
Members of the household sector get most of the money they spend on goods and services from their income. However, people do not get to spend all the income they earn; part of it goes to pay taxes. The part left over is called **after-tax income**.

Let’s say that the average household spends 90 percent of its after-tax income and saves the rest. (In other words, out of every $1 earned, it spends 90 cents and saves 10 cents.) Now suppose the average household earns $60,000 a year and pays $15,000 in taxes. The household has an after-tax income of $45,000. If the household spends 90 percent of its after-tax income, then $40,500 ($45,000/0.90) is spent on goods and services. If the economy includes, say, 50 million households, the entire household sector spends the following on consumption: 50 million × $40,500 = $2,025 billion.

What happens if government lowers taxes? For example, suppose it lowers taxes such that the average household no longer pays $15,000 in taxes but rather pays $10,000 in taxes. After-tax income now rises from $45,000 to $50,000. If the average household continues to spend 90 percent of its income, it now spends $45,000 ($50,000 × 0.90 = $45,000) on goods and services. If the economy includes, say, 50 million households, the entire household sector spends the following on consumption: 50 million × $45,000 = $2,250 billion.

The increase in total spending means that firms sell more goods. When firms start to sell more goods, they hire more workers to produce the additional goods. The unemployment rate goes down as a result of more people working.

Would things work in the opposite direction if taxes were raised? Most economists think so. A rise in taxes would lower after-tax income, thus lowering consumption spending. A reduction in consumption spending, in turn, would lower total spending in the economy.
stands to reason, then, that people would work more as the income tax rate came down from 100 percent. For example, people might work more at a 40 percent tax rate than at a 70 percent tax rate.

We can also look at this concept in terms of after-tax income. The higher your after-tax income, the more you are willing to work; the lower your after-tax income, the less you are willing to work. In other words, we would expect a much more industrious, hard-working, long-working labor force when the average income tax rate is, say, 20 percent than when it is 70 percent. It follows, then, that the supply of goods and services in the economy will be greater (the aggregate supply curve shifts rightward) when taxes are lower than when they are higher.

**Tax Rates and Tax Revenues**

Many people think that a tax rate cut results in lower tax revenues for the government, but it is not necessarily true. Tax cuts can lead to lower or to higher tax revenues. If Smith is a representative taxpayer who earns $2,000 each month and pays an average tax rate of 40 percent, then he pays $800 in taxes. His after-tax income is $1,200.

Now suppose the average tax rate is cut to 35 percent. Does it follow that tax revenues will decline? Not necessarily. As was stated earlier, tax cuts often stimulate more work, and more work leads to more income. Suppose, as a result of the tax cut, Smith works more and earns $2,500 a month, an increase in his income of $500 a month. Now he pays 35 percent of $2,500 in taxes, or $875, and he is left with an after-tax income of $1,625.

Thus, at a tax rate of 40 percent Smith paid $800 in taxes, but at a tax rate of 35 percent he paid $875 in taxes. So, in this example, if Smith is the representative taxpayer, a tax rate cut will actually increase tax revenues. The government will take in more tax money with a tax cut, not less money, because the rise in income was greater than the tax cut. Income rose from $2,000 to $2,500 a month, which is a 25 percent increase. The tax rate cut was from 40 to 35 percent, which is a 12.5 percent cut. In other words, as long as income rises by more than the taxes are cut, tax revenues will rise.

Consider what could have happened, though. Suppose Smith’s income had risen from $2,000 to $2,100 (a 5 percent rise in income) instead of to $2,500. At a tax rate of 35 percent and an income of $2,100, Smith pays $735 in taxes. In other words, he pays less in taxes at a lower tax rate. If he is the representative taxpayer, it follows that lower tax rates generate lower tax revenues, because the rise in income (5 percent) is less than the tax rate cut (12.5 percent).

A group of economists, called supply-side economists, believe that cuts in high tax rates can generate higher tax revenues, whereas cuts in low tax rates generate lower tax revenues. To illustrate, Exhibit 13-3(a) starts at a relatively high tax rate of 90 percent (point A). A tax rate cut to 80 percent raises tax revenue from $700 billion to $1,000 billion. Lower tax rates go together with higher tax revenues.

Alternatively, Exhibit 13-3(b) starts at a relatively low tax rate of 20 percent (point A). A tax rate cut to 10 percent lowers tax revenues.
Revenue from $1,000 billion to $700 billion. This time, lower tax rates are accompanied by lower tax revenues.

The curve in Exhibit 13-3 is called the Laffer curve, after economist Arthur Laffer. The Laffer curve simply illustrates the relationship that some economists believe exists between tax rates and tax revenues.

In Exhibit 13-3, you will notice that tax revenue is maximized at a tax rate of 50 percent. No one knows whether it is maximized at 50 percent; specific tax rates were added to the Laffer curve drawn here merely for explanatory purposes. As far as anyone knows, tax revenue may be maximized at some tax rate higher or lower than 50 percent.

The Laffer curve represents the relationship between tax rates and tax revenues that some economists believe exists. Starting at relatively high tax rates, a tax rate cut will generate higher tax revenues. For example, as shown in (a), the tax rate is cut from 90 percent to 80 percent and tax revenues rise. Starting at relatively low tax rates, a tax rate cut will generate lower tax revenues. For example, as shown in (b), the tax rate is cut from 20 percent to 10 percent and tax revenues fall. The Laffer curve is named after economist Arthur Laffer.

## Defining Terms
1. Define:
   - a. fiscal policy
   - b. expansionary fiscal policy
   - c. contractionary fiscal policy
   - d. crowding out
   - e. crowding in
   - f. after-tax income
   - g. Laffer curve

## Reviewing Facts and Concepts
2. What is contractionary fiscal policy, and why is it likely to be used?

## Critical Thinking
5. Is expansionary fiscal policy always effective at increasing total spending in the economy and decreasing unemployment? Explain your answer.

## Applying Economic Concepts
6. Someone says, “If the federal government cuts income tax rates, tax revenues will rise.” Might this person be wrong? Explain your answer.
Two Types of Monetary Policy

Monetary policy deals with changes in the money supply. If the Fed increases the money supply, it is implementing expansionary monetary policy. Its objective is to increase total spending in the economy to reduce the unemployment rate. If the Fed decreases the money supply, it does so to reduce total spending and thereby reduce inflation. In this case it is implementing contractionary monetary policy.

Expansionary Monetary Policy and the Problem of Unemployment

Many economists believe expansionary monetary policy works to lower the unemployment rate in the following manner:

- The Fed increases the money supply.
- A greater money supply is usually associated with greater total spending in the economy. (There is more money to spend.)
- As a result of increased spending in the economy, firms begin to sell more products.
- As firms sell more products, they hire more workers, thus lowering the unemployment rate.

The issue of crowding out does not arise in monetary policy. If the Fed increases the money supply, no one need spend less; there is simply more money to spend. Because crowding out is not an issue with expansionary monetary policy, many economists argue that an increase in the money supply will increase total spending in the economy, which will indirectly lower the unemployment rate.

**Example:** The Fed meets and decides that the unemployment rate in the economy is too high. The Fed wants to lower the unemployment rate. It decides to enact expansionary monetary policy—in other words, it decides to increase the money supply. In an earlier chapter, you learned that the Fed can increase the money supply by (1) lowering the reserve requirement, (2) undertaking an open market purchase, or (3) lowering the reserve requirement.
Scientists sometimes use the term butterfly effect to express the idea that small changes can be catalysts for huge changes (that are far removed in time and space from the initial small change). To illustrate, suppose a butterfly is flying over the equator. It flaps its wings as it flies. The flap of a butterfly’s wings is a tiny thing, but it could be just enough (at a particular place and time) to cause a small change in the weather, which could ultimately change the weather conditions around the world. A butterfly flapping its wings over Brazil could be the catalyst that ends up producing a hurricane off the coast of Florida.

Some people use the butterfly effect to explain why it is so hard to predict the future. After all, if something as small as a butterfly flapping its wings can make the difference between a hurricane and no hurricane, then how many other little things in the world can upset one’s predictions?

People also use the butterfly effect to explain how a change in one place—far away from a person—can end up affecting that person’s life. These people might even say that a change in monetary policy can affect a person’s life, maybe even yours.

Take the case of Caroline, who is 17 years old. Caroline has blue eyes. One day someone asks her why she has blue eyes. She says it is because both her mother and father have blue eyes.

Now we ask ourselves how Caroline’s mother and father met. It turns out that they met in Denver. Her mother was a college student at the time and her father was working on a construction crew building apartment buildings. When we dig deeper, we learn that the only reason Caroline’s father was in Denver is because he couldn’t find work in his hometown, Austin, Texas. Why couldn’t he find work in Austin? Well, at the time, the economy was depressed and the unemployment rate was high.

Reacting to this state of affairs, the Fed decided to increase the rate of growth in the money supply. The “new money” the Fed created found its way initially to Denver, and so the Denver economy started moving upwards before many other local economies. The man who was to become Caroline’s father, who was living in Austin at the time, heard that jobs were plentiful in Denver and so he went there looking for a job.

In other words, if the Fed hadn’t increased the money supply, the Denver economy might not have started booming (when it did). And if Denver’s economy hadn’t begun to boom, Caroline’s father may not have gone to Denver, where he met and married Caroline’s mother. And if they hadn’t met, they would not have had Caroline—who, we remember, has blue eyes because both her mother and father have blue eyes.

Or does Caroline have blue eyes because of the Fed enacting monetary policy?

**THINK ABOUT IT**

1. Try to find butterfly effects in your life. How many can you come up with?
2. Create a story in which a change in fiscal or monetary policy causes what would seem to be an unrelated event (similar to Caroline’s having blue eyes).
discount rate. In time, the money supply rises. People have more money to spend, and so they spend it. As a result, firms sell more goods and services. To produce the additional goods and services, the firms have to hire more people. In the end, the unemployment rate drops.

### A Student Asks

**QUESTION:** Do the president or members of Congress have anything to do with monetary policy?

**ANSWER:** No, strictly speaking monetary policy is under the jurisdiction of the Fed (which we discussed in Chapter 10). The president and the members of Congress deal with fiscal policy, the Fed with monetary policy.

### Contractionary Monetary Policy and the Problem of Inflation

Many economists believe contractionary monetary policy works to reduce inflation in the following manner:

- The Fed decreases the money supply, perhaps by conducting an open market sale. (Open market sales are discussed in Chapter 10.)
- A smaller money supply is usually associated with lower total spending in the economy. (There is less money to spend.)
- As a result of the decrease in spending in the economy, firms begin to sell less.
- As firms sell fewer products, their inventories in the warehouses rise. To get rid of surplus goods, firms reduce prices (or they at least stop raising prices).

Exhibit 13-4 summarizes expansionary and contractionary monetary policies.

### Monetary Policy and the Exchange Equation

The exchange equation, introduced in Chapter 12, states that the money supply ($M$) times velocity ($V$) is equal to the price level ($P$) times the quantity of goods and services produced ($Q$):

$$ M \times V = P \times Q $$

Some economists say that the objective of monetary policy, pure and simple, is to maintain a stable price level—in other words, keep $P$ constant in the exchange equation. If this objective is met, then neither inflation ($P$ rising) nor deflation ($P$ falling) occurs.

Suppose maintaining a stable price level is the objective. How should the Fed go about meeting it? To answer this question, we must realize that if $M \times V = P \times Q$, then

$$ \% \Delta M + \% \Delta V = \% \Delta P + \% \Delta Q $$

where $\Delta$ stands for “change in.” In other words, the percentage change in the money supply plus the percentage change in velocity equals the percentage change in the price level ($P$) times the quantity of goods and services produced ($Q$):

### Exhibit 13-4 The Effectiveness of Monetary Policy

<table>
<thead>
<tr>
<th>Objective</th>
<th>Policy</th>
<th>Does the policy affect total spending in the economy?</th>
<th>Does the policy meet the objective?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce unemployment</td>
<td>Expansionary monetary policy</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reduce inflation</td>
<td>Contractionary monetary policy</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
For most people, *The Wizard of Oz* is the story of a young girl, Dorothy, who travels a yellow brick road to Emerald City, where she encounters a wizard (who really isn’t a wizard). But *The Wizard of Oz* is really a story about monetary policy in the United States about 1893.

The country had fallen into an economic depression. The stock market had crashed, banks had failed, many workers had been laid off. Some people blamed the bad times on the gold standard. The gold standard was a monetary arrangement where gold backed paper money, and so a major way to get more paper money was to get more gold.

Now many people at the time said that the economic bad times would disappear if only people had more money to spend. They didn’t have any more money to spend because the government had already printed up all the paper money it could, given its gold supply. What to do? Some suggested that the government should use both gold and silver to back paper money, and not only gold. With gold and silver backing the paper money supply, more money could be printed, turning the bad economic times into good economic times.

One of the champions of the so-called silver movement was William Jennings Bryan, who was the Democratic candidate for the U.S. presidency in 1896. A big supporter of Bryan was L. Frank Baum, the author of *The Wonderful Wizard of Oz*, which was the book that was the basis for the 1939 movie *The Wizard of Oz*.

In the book and movie, Dorothy represents William Jennings Bryan.

Both Dorothy and Bryan were young (Bryan was 36 years old when he ran for the presidency). The cyclone in the book and movie transports Dorothy to Oz, in much the same way that the delegates at the Democratic convention lifted Bryan into the world of presidential politics. (Oz is the abbreviation for ounces, as in an ounce of gold or an ounce of silver, the common measurement for these two metals.)

As Dorothy begins her travels to the Emerald City (which represents Washington, D.C.) with her dog Toto (who represents the Democratic Party) to meet the Wizard of Oz, she travels down a yellow brick road. The yellow brick road represents the gold standard. On her way, she meets a scarecrow (who represents the farmers of the day), a tin man (who represents the manufacturing workers of the day), and a cowardly lion (who represents the Populist Party of the time). The Populist Party was often represented in cartoons of the day as a lion. It was said to be cowardly because it didn’t have the courage to wage an independent campaign for the presidency in 1896.

The message was clear, according to Baum. Jennings, along with the farmers, manufacturers, the Populist Party, and the Democratic Party, would travel along the road of the gold standard to Washington, D.C., and make things right.

Once Dorothy reaches the Emerald City, however, she and the others are denied their wishes, just as Bryan is denied the presidency. (He loses the election.)

All is not over though. Dorothy still must battle with the Wicked Witch of the West, who wears a golden cap (the gold standard). When the witch sees Dorothy’s silver shoes (they were ruby shoes in the movie but silver shoes in the book), she desperately wants them for their magical quality. Unfortunately for the witch, Dorothy kills the Wicked Witch of the West, and then clicks her silver slippers together. The silver slippers take her back home, where all is right with the world.

Do you think Baum had any knowledge of the exchange equation? Explain your answer.
level plus the percentage change in the quantity of goods and services. For example, if the money supply grows by, say, 3 percent, and velocity rises by 1 percent, then it means a 4 percent change on the left-hand side of the exchange equation. Ask yourself how much the right-hand side must rise now (because the right-hand side will always equal the left-hand side). The answer is 4 percent.

The exchange equation can be rearranged in a way that shows how the percentage change in the money supply is calculated. Subtracting $\%\Delta V$ from both sides gives us:

$$\%\Delta M = \%\Delta P + \%\Delta Q - \%\Delta V$$

With this equation in mind, suppose that the average annual changes in velocity and quantity of goods and services are as follows:

1. $\%\Delta V = 1\%$
2. $\%\Delta Q = 3\%$

Now let’s assume that the objective is to hold the price level stable:

3. Objective: $\%\Delta P = 0\%$

Given 1 through 3, how much should the Fed increase the money supply so that the price level does not change? The answer is 2 percent:

$$\%\Delta M = \%\Delta P + \%\Delta Q - \%\Delta V$$

$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$

$$2\% = 0\% + 3\% - 1\%$$

Some economists propose that monetary policy should be implemented this way—that is, put on automatic pilot. The Fed should simply compute the average annual change in velocity and in the quantity of goods and services, set the percentage change in prices equal to 0 percent, and calculate the money supply change accordingly. The Fed should not fiddle with the money supply from month to month or year to year. It should not increase it sometimes and decrease it other times.

Will such a policy always yield stable prices? Probably not, because in some years $V$ and $Q$ will change by more or less than the average annual rate. For example, if the average annual change in velocity is 1 percent, some years it might change by, say, 2 percent or 0.5 percent. Economists who support this type of monetary policy, however, say that the changes in $V$ and $Q$ will be close enough to their average annual changes that we will
come close to keeping prices stable if we simply put money supply changes (monetary policy) on automatic pilot.

A Student Asks

QUESTION: It seems to me that you are saying that the president, the members of Congress, and the Fed can use economic policy (fiscal or monetary) to get rid of almost any economic sickness—high unemployment or high inflation. It is as if the government always has the right economic medicine to cure the economy of what ails it. But if it does, then why does the economy stay sick sometimes?

ANSWER: Well, think about these factors: First, not all economists agree that government does have the right medicine. For example, go back to our discussion of fiscal policy. Some economists thought the medicine of “expansionary fiscal policy” would not cure the economy of high unemployment because of crowding out.

Second, sometimes economic policies are enacted too early or too late. Just like a medicine that will not cure a patient whose disease has gone too far, sometimes something similar happens in economics.

Third, sometimes economic policies are not as precise as we need them to be. For example, suppose the unemployment rate is high and the Fed wants to lower it. We know that it will enact expansionary monetary policy—it will raise the money supply. But suppose it raises the money supply too much. It could raise the money supply by more than is necessary and end up solving the high unemployment problem but causing a new problem to take its place—the problem of high inflation. It would be similar to giving a human patient too much of a medicine, and in the process of curing one disease it produces a different health problem at the same time. Think of it this way: the right amount of an antibiotic can make you well, but too much of an antibiotic can make you sick. Even the best doctors are not always sure which antibiotic or how much of it is just the right amount for a particular patient.

Defining Terms
1. Define:
   a. expansionary monetary policy
   b. contractionary monetary policy

Reviewing Facts and Concepts
2. Explain how expansionary monetary policy can lower the unemployment rate.
3. The objective is to keep prices stable. Suppose the average annual change in velocity is 1 percent, and the average annual change in the quantity of goods and services is 4 percent. By what percentage should the Fed increase the money supply?

Critical Thinking
4. What evidence would be inconsistent with the theory that predicts lower inflation through contractionary monetary policy?
5. What evidence would support the theory that lower inflation will result from contractionary monetary policy?

Applying Economic Concepts
6. Suppose the Fed sets as its single objective the stabilization of the price level. To this end, it decides to automatically increase the money supply by 2 percent each year based on an average annual change in velocity of 1 percent and an average annual change in the quantity of goods and services of 3 percent. If current-year velocity is above its average annual rate, what will happen?
Rising Unemployment and Inflation (at the Same Time)

For many years, economists believed that the economy would experience either high inflation or high unemployment, but not both at the same time. Moreover, they believed that inflation and unemployment moved in opposite directions. As the inflation rate increased, the unemployment rate decreased; and as the inflation rate decreased, the unemployment rate increased. Economists thought that inflation and unemployment were on opposite ends of a seesaw.

Real-world data appeared to support this view. For example, during most of the 1960s, inflation and unemployment moved in opposite directions. But in the 1970s, the inflation-unemployment trade-off disappeared for a few years. Instead of moving in opposite directions, inflation and unemployment began to move in the same direction—specifically, they both began to increase. The economy began to experience high inflation and high unemployment at the same time, or stagflation.

Focus Questions
- When the money supply rises, why does the output of goods and services rise before prices?
- When the money supply falls, why does the output of goods and services fall before prices?
- What causes stagflation?

Key Terms
stagflation
stop-and-go, on-and-off monetary policy

How Money Changes Affect the Economy

Some economists believe that stagflation is the result of a stop-and-go, on-and-off monetary policy. Before we examine their position, though, it is important that we look at the sequence of effects that monetary policy has on the economy.

stagflation
The occurrence of inflation and high unemployment at the same time.
stop-and-go, on-and-off monetary policy
An erratic monetary policy.
Did you realize that you may be on your way to becoming an economic policy advisor? For example, here are some economic questions you know the answers to.

- **What is expansionary monetary policy?** (An increase in the money supply.)
- **How does the Fed change the money supply?** (By changing the reserve requirement, conducting open market operations, or by changing the discount rate.)
- **Will a cut in tax rates always lower tax revenues?** (No, not always.)

Why do you know the answers to these questions, but most people do not? The obvious answer is that you are currently taking an economics course and you have some incentive to learn economics—if you don’t learn it your economics grade is going to be low.

Suppose economics were not a course you had to take in high school. Would you have gone to a bookstore, purchased a book on economics, and started to read it? If you are like most people, your answer is “no.” The reason you, and others, would not have learned about economics is because it would not have seemed worth it to you. The costs of learning economics would have been greater than the benefits.

The author of this text does not know much about geology. He could, if he wanted to, learn about geology. The reason he doesn’t is because (for him) the costs of learning geology are higher than the benefits.

When people choose not to learn something (that they have an ability to learn), economists say they are exhibiting *rational ignorance*. Rational ignorance is different from ignorance. For example, suppose that someone named Smith tries to learn astrophysics, but can’t. In this case we could say that Smith is ignorant when it comes to astrophysics. A person is *rationally ignorant*, however, if he can learn something but chooses not to. Everyone—and we do mean everyone—is rationally ignorant when it comes to some things.

When it comes to economics, many people are rationally ignorant. But why?

Well, let’s consider *expansionary fiscal policy* as an example. Many people will not be able to tell you what it is. That’s because they decided that even if they know about it, they can’t change it. It’s sort of like the weather. Why take a big interest in it if you can’t change it? It is what it is.

Of course, just because you can’t change something (the weather or fiscal policy in the United States, for example), it doesn’t mean that it doesn’t affect you. The rain, snow, and sunshine affect your day, and fiscal policy can affect your life.

Sometimes *knowing* that something can affect your life will make all the difference. A person checks the weather report because she wants to know if she should take an umbrella to work tomorrow. You might want to check the money supply figures to know whether an “inflation storm” is beginning to build. (Maybe I should buy the car now before inflation hits.) You might want to keep an eye on Congress and the president to get a feel about whether taxes are going up or down. (I might want to take on less overtime work this year when income taxes are high and take on more overtime work next year when taxes are low.)
Most economists agree that changes in the money supply affect both prices and the output of goods and services, but that output is affected before prices. For example, when the Fed increases the money supply, total spending in the economy increases. As a result, firms sell more goods. Consequently, they begin to hire more laborers and produce more output. It is only later that prices rise.

Why does output rise before prices? Because when firms begin to sell more, they do not know at first whether this increase is temporary or permanent. Thinking it may be temporary ("It was a good sales week, but next week may not be so good"), firms do not yet want to change prices. If they raise prices and later learn that the higher sales were only a quirk, they may become less competitive.

Consider Yoko, who owns a pizza restaurant. In an average week, she sells 400 pizzas at an average price of $6. This week, she sells 550 pizzas. Yoko does not know why she did so well this week. People may be getting tired of hamburgers, or people may be getting tired of eating at home, or the Fed may have raised the money supply and increased total spending.

Yoko could immediately raise the price of her pizzas from $9 to $11, but suppose her higher-than-average sales do not last. If this week’s higher sales are only temporary and she raises her price to $11 (while her competitors keep their prices the same), Yoko may hurt her business. She is therefore likely to be cautious and wait to see what happens. If sales continue at 550 a week, maybe after a few weeks she will raise her price. But if sales drop back to 400 a week, she will keep the price as it is. We can conclude that given an increase in the money supply, output is likely to go up before prices do.

Similarly, when the money supply decreases, output is affected before price. Suppose that instead of selling her average of 400 pizzas this week, Yoko sells only 250 pizzas. She does not know why sales are lower than average; she just knows they are. She reduces her output of pizzas and perhaps

▲ An increase in the money supply will likely cause an increase in spending, which in turn causes an increase in production and employment. *In this situation what usually happens to prices, and when does it happen?*
cuts back on overtime for her employees. She does not immediately reduce the price, though, because she cannot be sure whether the lower-than-average sales will continue. She does not want to lower the price until she is sure that the demand for her good has fallen. We conclude that given a decrease in the money supply, output is likely to go down before prices do.

**Example:**
Elizabeth owns a hair salon. Last week she did better than she has ever done. It seemed as if business was booming. She is not quite sure what caused the booming business. She hires more hair cutters, but she doesn’t raise prices—at least not yet. Now suppose time passes, and Elizabeth has the worst business week of her life. People canceled their appointments right and left and weren’t rescheduling. Elizabeth is not quite sure what happened. Again, she adopts a wait-and-see attitude. She cuts back the hours of a few hair cutters, but she doesn’t lower prices yet.

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**What Causes Stagflation?**

Some economists believe stagflation is caused by a *stop-and-go, on-and-off monetary policy* (an erratic monetary policy) that was defined earlier. They describe what happens as follows:

- The Fed increases the money supply. It pushes the monetary accelerator to the floor, which first raises output and then raises prices.
- Time passes. The increased money supply raises the price level—that is, it causes inflation.
- At the same time people are dealing with the high inflation, the Fed reduces the money supply. It presses on the monetary brakes. As a result, output is affected first, and it falls. Because of less output, fewer people are required to work in the factories. Unemployment rises.

Notice that in the economy, inflation is coupled with a cutback in output and an increase in unemployment. The previous monetary policy (money supply up) caused the high inflation, and the current monetary policy (money supply down) caused the high unemployment. The economy is experiencing the effects of both monetary policies, or stagflation.

Not all economists agree with this description of the cause of stagflation or believe it is the only cause. Some economists maintain that a marked decrease in aggregate supply (perhaps due to a fall in the market supply of a major resource, such as oil) can also cause stagflation.

**Example:** Think of things happening along a time line. It is January and the Fed increases the money supply. Let’s say that prices are starting to head upward by April. Then in May, the Fed decreases the money supply. Soon after, in July, output is headed down and so the unemployment rate rises. (Less output means fewer people needed to produce the output.) Is anything else happening in July? Yes, remember prices started heading up back in April, and they are continuing to rise in July. So what does July look like? July is a month of rising unemployment (caused by the...
money supply decrease in May) and rising prices (caused by the money supply increase in January). ♦

**A Student Asks**

**QUESTION:** It seems to me that monetary policy is important. If the money supply is too high, we seem to get inflation. If it is too low, we might end up with high unemployment. If it goes from up to down too quickly (stop and go, on and off) we get stagflation. Do I have this right? Is the money supply a big factor in what happens in the economy?

**ANSWER:** Most economists would say that it is. Think of it in extreme terms for a few minutes. Suppose the money supply were cut in half overnight. Wouldn't that cut spending in the economy dramatically and result in high unemployment? Suppose the money supply were raised by 50 percent overnight. Wouldn't that lead to a high rate of inflation? Now, in reality, the Fed does not raise or lower the money supply by these large percentages, but that doesn’t mean the smaller changes in the money supply that the Fed makes do not have consequences.

Most people are used to thinking that what the president does, or what the members of Congress do, is all that matters to the state of the economy. But what the Fed does is extremely important to the state of the economy. Some people call the chair of the Fed the second most powerful person in the country, after the president, because that person has a big part in directing the monetary policy of the country.

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**Defining Terms**

1. Define:
   a. stagflation
   b. stop-and-go, on-and-off monetary policy

**Reviewing Facts and Concepts**

2. In the past how did economists view the relationship between unemployment and inflation? When did economic events begin to change this view?

3. Does a decrease in the money supply cause a change in output, prices, or both?

4. When the money supply increases, output rises before prices. Why?

5. Explain in detail how some economists believe the Fed causes stagflation. What is an alternative view of what causes stagflation?

**Critical Thinking**

6. Because firms adjust output before prices, what information do they lack?

**Applying Economic Concepts**

7. What effect, if any, do you think stagflation plays in the reelection prospects of the president of the United States?
Chapter Summary

To reinforce your knowledge of the key terms in this chapter, fill in the following blanks on a separate piece of paper with the appropriate word or phrase.

1. The scenario in which government spending increases by $1 and, as a result, private spending decreases by $1 is called ______.
2. If the Fed decreases the money supply, it is implementing a(n) ______ policy.
3. If the Fed increases the money supply, it is implementing a(n) ______ policy.
4. The scenario in which government spending decreases by $1 and, as a result, private spending increases by $1 is called ______.
5. ______ is the simultaneous occurrence of inflation and high unemployment.
6. ______ refers to changes government makes in spending, taxation, or both to achieve particular macroeconomic goals.
7. The ______ expresses the relationship that some economists believe holds between tax rates and tax revenues.
8. Income minus taxes is ______.
9. If the government increases its spending or lowers taxes, it is implementing a(n) ______ policy.
10. If the government decreases its spending or raises taxes, it is implementing a(n) ______ policy.

Understanding the Main Ideas

Write answers to the following questions to review the main ideas in this chapter.

1. Explain how complete crowding in affects contractionary fiscal policy.
2. In general, what is the cause of stagflation?
3. Explain the process by which expansionary monetary policy reduces the unemployment rate.
4. Explain the process by which contractionary monetary policy reduces inflation.
5. How can changes in income tax rates affect both the supply side and the demand side of the economy?
6. Rosa Jenkins, who owns a hotel, rented out a higher-than-average number of rooms this week. Why is she likely to wait awhile before she raises the room rent?

7. Describe the process by which expansionary fiscal policy reduces unemployment (assuming no crowding out or incomplete crowding out).

8. Explain why expansionary monetary policy is probably not a solution to stagflation.


10. What causes the inflation part of stagflation? What causes the unemployment part of stagflation?

Doing the Math

Do the calculations necessary to solve the following problems.

1. Suppose the average tax rate is 20 percent, and tax revenues are $800 billion. What does (taxable) income equal?

2. Suppose the average tax rate is 25 percent, and tax revenues equal $600 billion. If the average tax rate falls to 20 percent, how much will (taxable) income have to increase in order to keep tax revenues unchanged?

Working with Graphs and Tables

1. If the objective is to maintain price stability, by what percentage should the money supply change in cases A through D in Exhibit 13-5?

2. Using Exhibit 13-6, answer the following questions.
   a. What happens to tax revenues as the tax rate is lowered from E to D?
   b. What happens to tax revenues as the tax rate is increased from A to B?
   c. What is the tax rate at which tax revenues are maximized?
   d. What happens to tax revenues as the tax rate is increased from D to E?

Solving Economic Problems

Use your thinking skills and the information you learned in this chapter to find solutions to the following problems.

1. Application. It is sometimes said that making consistently accurate predictions in economics is difficult. Based on your reading of this chapter, give an example that illustrates this point.

2. Writing. Based on your reading of the chapter, write a one-page paper that addresses this question: Why do economists differ in their views on the effects of fiscal policy actions?